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Guidelines for accommodating social and environmental considerations in the United Nations Framework Classification for Resources

Draft guidance for accommodating environmental and social considerations in the United Nations Framework Classification for Resources

Prepared by the Social and Environmental Considerations Task Force of the Expert Group on Resource Classification

Summary

The Social and Environmental Considerations Task Force of the Expert Group on Resource Classification is the successor to the E-axis Sub-group. It has examined the social and environmental aspects of classification of the E axis of the United Nations Framework Classification for Resources (UNFC). Progress reports were presented at the seventh and eighth sessions of the Expert Group (ECE/ENERGY/GE.3/2016/8 and ECE/ENERGY/GE.3/2017/6 respectively). The main recommendation of this document is the division of the E2 Category into E2.1 and E2.2 to reflect the probability that social and environmental issues will be resolved, and guidance is provided. The recommendations of this report only address the social and environmental issues, and further thought will be needed with respect to economic aspects of the E axis, and to the social and environmental issues of specific resource types. A separate draft report on Accommodating Social and Environmental Considerations in UNFC: Concepts and Terminology (ECE/ENERGY/GE.3/2018/4) recommends that the Bureau of the Expert Group considers the clarification of some terms in UNFC that were considered necessary to the work of the Task Force. It also contains discussions on some general topics that arose during the course of work, for consideration during the pending update of UNFC.

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I. Introduction

1. Our society depends on the availability of many types of resource, and for any resource development project to proceed to production, many technical, economic, social, and environmental issues must be resolved. Successful resolution of these issues is essential for responsible development and use of energy resources, and thus essential to achieving the benefits that stem from resource development and use.

2. Until recently, social and environmental factors were rarely considered in the classification of resources. However, their importance has grown considerably in the last few years, and many projects have been delayed or cancelled because they failed to meet social or environmental expectations, even though they met all other conditions that would otherwise result in them being classified as viable projects.

3. The Expert Group on Resource Classification E-axis Sub-group was established in 2015 to examine the social and environmental aspects of classification using the United Nations Framework Classification for Resources (UNFC[1]). Reports were presented at the 2016 and 2017 annual meetings of the Expert Group (ECE/ENERGY/GE.3/2016/8 and ECE/ENERGY/GE.3/2017/6 respectively).

4. At the seventh session of the Expert Group in 2016, draft guidance was presented on accommodating environmental and social considerations in the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (ECE/ENERGY/GE.3/2016/8) (2016 Report), with preliminary recommendations. Appendix I of the 2016 Report contains a summary of existing classification guidance on social and environmental issues from various sources. Although many of these identify social and environmental issues that may affect resource classification, they provide no substantial guidance.

5. Two reports were presented at the eighth session of the Expert Group in 2017:

(a) Draft Guidance on accommodating environmental and social considerations in the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources (UNFC-2009) (ECE/ENERGY/GE.3/2017/6) (2017 Report);

(b) Draft Guidance on accommodating environmental and social considerations in UNFC-2009: Concepts and Terminology (ECE/ENERGY/GE.3/2017/7) (2017 Concepts Report). This addressed issues that arose during the work of the E-axis Sub-group that required additional consideration, some of which were broader in nature than the E axis.

6. Following the eighth session of the Expert Group in 2017, the E-axis Sub-group was reconstituted as the Social and Environmental Considerations Task Force (Task Force). This report presents the results of the Task Force, for consideration by the UNFC Revision Task Force during the planned update of UNFC and should be read in conjunction with the document "Accommodating Social and Environmental Considerations in UNFC: Concepts and Terminology (ECE/ENERGY/GE.3/2018/4) (2018 Concepts Report), which provides additional background on the E axis, terminology, and on some broader aspects of classification.

7. Social and environmental issues are complex, broad in scope, and dynamic, and comprehensive guidance on their application cannot be provided within the limited scope of this document. Further work will be required to make them more complete, and to keep

[1] The United Nations Framework Classification for Resources (UNFC) changed its name in April 2017. Prior to this, UNFC was known as the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009).

them current. This report addresses issues that are common to all resource types. Guidance on the social and environmental consideration that are particular to specific resource types should be developed by the relevant resource-specific Working Groups of the Expert Group on Resource Classification.

8. The major recommendations of this guidance document are:

(a) Replacing the reference to "economically viable" in the E-axis definitions with "economically, socially and environmentally viable";

(b) A division of the E2 Category into E2.1 and E2.2 Sub-Categories, based on the probability that a project will proceed. The revised classification is given in Annex I;

(c) Guidance on using the E2.1 and E2.2 Sub-Categories;

(d) Clarification of terminology. The clarified terminology that has been used in this document is provided in Annex III, Glossary of Terms, and discussed in detail in a separate document (ECE/ENERGY/GE.3/2018/4) (2018 Concepts Report).

II. Terms of Reference and Scope

A. Terms of Reference (TOR)

9. The Terms of Reference for the Task Force, based on the current Expert Group Work Plan, are:

(a) Finalize the high-level guidelines by resolving remaining issues and making any amendments that arise from the development of detailed guidelines;

(b) Prepare detailed guidance on assessing environmental and social considerations for the classification of resources for non-resource specific areas;

(c) Retain the focus on environmental and social issues, but consider how these integrate with E-axis economic issues and related F- and G-axes issues;

(d) Coordinate with resource-specific the Expert Group on Resource Classification Working Groups to ensure consistency with detailed resource-specific E-axis guidance;

(e) Prepare a report on technical, policy and legal aspects related to accommodating environmental and social considerations for the classification of resources in various sectors.

10. Social and environmental guidance in the Expert Group documents, notably Specifications for the application of UNFC, including for Renewable Energy and Geothermal Energy Resources, have been reviewed. However, there has not yet been any significant effort to work with the resource-specific Working Groups.

B. Scope

11. This report is concerned with the social and environmental aspects of resource classification and does not address the following related and important factors:

(a) The processes of resolving social and environmental issues that are encountered during the development of a project as it matures to implementation;

(b) How social and environmental issues should be reported in a resource report;

(c) The social or environmental merits, or otherwise, of resource development.

12. The E axis is concerned with "socio-economic" criteria for the classification of resources using UNFC. Although the mandate of the Task Force is to consider the social and environmental aspects and not the economic aspects of the E axis, it was necessary to address the latter to a limited extent, to distinguish them from the social and environmental aspects, and the impact that the latter may have on project economics. The relationship of social and environmental factors to the F and G axes was also considered but not examined in detail

13. Resource evaluation and classification traditionally focused on the immediate extraction process, by considering measures such as a Net Present Value (NPV) while ignoring externalities such as social and environmental issues. An externality is described as:

> "An externality is a cost or benefit resulting from an action that is borne or received by parties not directly participating in the action." (the United States Environmental Protection Agency (U.S. EPA), 2010)[2]".

14. Although there may not be agreement on what should be included, nor on whether the effect of an externality is positive or negative, social and environmental externalities have become an increasingly important factor in decisions on resource extraction projects, and hence on classification. What was previously considered an externality may now have become an internality that must be resolved for a project to proceed. For classification under UNFC, it is recommended that only those externalities that directly impact the project that is being assessed should be considered. Further discussion of the concept of externalities can be found in the 2018 Concepts Report.

15. The need to obtain local stakeholder approval and broader acceptance for a project to proceed is typically described as a requirement for "social licence" or "social licence to operate" (SLO), a concept that has attracted greater interest and attention in recent years.

16. There are varying "definitions" of "social licence", and "social licence to operate", but it essentially requires the resolution of any social and environmental issues that could inhibit or prevent a decision to proceed with a project. Social licence is a generic term that collects all the social and environmental issues relevant to a resource project under one heading, and although a useful informal term, it is not always clear what might be included. Because of its generic nature, "social licence" is not recommended as a classification criterion, which should be based on the individual contingencies that apply to a project.

17. There is a high degree of commonality in the social and environmental aspects of different types of resources, and the guidance provided here is intended to be relevant for all resources to which UNFC applies. However, there will also be issues that are specific to a resource or jurisdiction, in which case, reference should be made to the relevant resource-specific or jurisdictional guidance.

III. UNFC E Axis

A. Introduction

18. The current UNFC E-axis Categories and Sub-categories can be found in UNFC-2009 incorporating Specifications for its Application, ECE Energy Series No. 42, Part I, Annex I, page 9 and Annex II page 12, respectively. UNFC-2009 also sub-classifies projects based on

[2] U.S. EPA, 2014, Guidelines for Preparing Economic Analyses, EPA 240-R-10-001, December 2010 (updated 2014), Front Matter, p. 15. Available on-line at: https://www.epa.gov/environmental-economics/guidelines-preparing-economic-analyses. See also, https://en.wikipedia.org/wiki/Externality, for a more extensive account and additional references on the concept of externalities.

the level of maturity (UNFC-2009 Specification G: Classification of projects based on the level of maturity and Annex V).

B. The relationship between social, environmental, and other factors

19. The UNFC E axis is labelled as "socio-economic" and combines these two aspects of resource classification. A project may meet all the requirements of the F and G axes and the economic component of the E axis, but unless it is also socially and environmentally acceptable, it often cannot proceed.

20. The various factors involved in resource classification do not exist in isolation, and the distinction between them may not be clear. Some of the social and environmental factors that affect the E axis may also affect the F axis, such as ownership, contract terms, legal, regulatory issues, and in some cases, fiscal terms (taxes, royalties, etc.). A change or delay in the development costs of projects, due to social and environmental issues, can have a significant impact on the near-term financial value of a project, even making it no longer viable. Subsidies may allow an otherwise uneconomic project to proceed as part of a social initiative.

C. Other guidance on social and environmental factors

21. There is considerable literature on social and environmental matters, mainly on how to address them when developing a project, but little that is related to classification. Appendix I of the 2016 Report contains a summary of material from various sources relating to the E axis and social and environmental factors and Annex I of the 2017 report lists additional sources. Most of these discuss social and environmental factors, but none contain significant guidance on classification. This is unlike the F and G axes, which are covered in considerable detail in resource-specific guidance and associated publications. The World Bank and the International Finance Corporation (IFC), must rate projects to assess their risk and uncertainty before making loans. Although their publications[3] do not classify projects in the same way as UNFC, they provide a useful view on social and environmental classification. The System of Environmental-Economic Accounting (SEEA)[4] is managed by the Statistics Division of the United Nations Department of Economic and Social Affairs and refers to UNFC as the standard for energy classification. Although SEEA refers to environmental and social factors, it provides no significant guidance as to how they affect classification.

22. The evaluation and classification of resources according to UNFC assume that it is carried out by a person with an appropriate level of expertise[5]. However, the assessment of social and environmental contingencies falls outside the historic resource evaluation and

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[3] For IFC Performance Standards see http://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards. Of particular significance are IFC Performance Standards on Environmental and Social Sustainability Effective January 1, 2012, https://www.ifc.org/wps/wcm/connect/c8f524004a73daeca09afdf998895a12/IFC_Performance_Standards.pdf?MOD=AJPERES

[4] https://unstats.un.org/unsd/envaccounting/seea.asp

[5] Expert Group on Resource Classification Guidance on Competent Person Requirements and Options for Resources Reporting https://www.unece.org/fileadmin/DAM/energy/se/pdfs/UNFC/UNFC-Guidance-Notes/Guidance_Note_on_Competent_Person_Requirements_and_Options_for_Resource_Reporting.pdf

classification process and the expertise of most evaluators, and it will often be necessary to involve others with the appropriate expertise to assess the social and environmental aspects of resource classification.

IV. Proposed revisions to the E-axis categories

23. Annex I, Proposed Revised E-axis Categories, shows the recommended changes to the E-axis Category and Sub-category definitions, but it should be noted that these consider only social and environmental factors. In summary, they are:

(a) Changing the word "economically" in the definitions to "economically, socially, and environmentally", because E-axis categorisation depends not just on economic viability;

(b) Minor additional wording or changes to wording, for clarity;

(c) Dividing E2 into sub-categories E2.1 and E2.2 to indicate the probability that social and environmental impediments to carrying out a project will be resolved in the foreseeable future.

24. Categorisation of a project as E1 requires that all economic and social and environmental issues have been resolved to the extent that a project can proceed and that the quantities produced will be sold, as E3 that there is no reasonable expectation that they will be produced and sold. The current E2 Category definition does not refer to social and environmental issues and, because there is a wide range in the probability of their resolution, it is recommended that E2 should be divided into Sub-Categories of E2.1 and E2.2, based on an assessment of the probability that a project will proceed.

25. For the E axis, UNFC-2009 incorporating Specifications for its Application, Part I, Section II, Categories and Sub-categories, currently says:

> "…the degree of favourability of social and economic conditions in establishing the commercial viability of the project including consideration of market prices and relevant legal, regulatory, environmental and contractual conditions".

26. The degree of favourability is not currently defined but would be expressed by the probability that a project will be carried out. The term probability has been used here and in 2018 Concepts Report. It dictates a threshold for when changes in categories may be made (e.g., progression from E2, "Expected to become economically viable in the foreseeable future", to E1 "Confirmed to be Economically viable"). This is captured qualitatively by UNFC, for example, with E1F1G1 (111) being the highest probability and other classes, such as E2F2G1 (221), having a lower probability.

V. Guidance on E-axis social and environmental categorisation

A. Social and environmental classification criteria

27. Contingencies[6] are conditions that must be resolved before a project can proceed to the next stage of project maturity as it advances to execution. Assignment into one of the UNFC Categories or Sub-Categories depends on the probability that the relevant contingencies, including the social and environmental issues, that are required for a project to

[6] Once resolved, these would no longer affect classification.

proceed will be resolved. While almost all projects involve social and environmental issues, they will not always be contingencies that would affect categorization. The discussion below focuses mainly on social and environmental issues that may be contingencies.

28. The removal of a contingency requires action by the relevant parties. Simple examples would be a sales contract that allows product sales, attainment of access to markets, or testing an exploration well to confirm that it could produce at economically viable rates. For social and environmental issues, it may require action such as the application for, or receipt of, regulatory approval, agreements to limit operations during periods of environmental sensitivity (e.g. limiting or curtailing wind power generation during bird migration or breeding).

29. Environmental and social contingencies can be considered under two headings:

(a) **Formal.** Contingencies subject to formal legal and regulatory processes, such as the granting of environmental approval, approval to drill, explore, develop, or construct. Resolving these contingencies would generally lie within the control of an operator, partnership, or government. In this case, estimating the probability that a project will proceed with or without active engagement with stakeholder may be relatively straightforward, and in developed areas, regulatory approval may be a matter of routine and not considered to be a contingency;

(b) **Informal.** Formal approval may not be sufficient to allow a project to proceed, since there may be obstacles to the implementation of a project that lies outside a formal process. The probability of the resolution of this type of contingency will usually be more difficult to assess, and it may lie beyond the control or influence of an asset owner or even a government. For example, concerns of local communities about the positive or negative impacts[7] of a mineral recovery project on the community, or of organisations that would not be directly affected by a project and could involve informal civil activity ranging from protests to violent action. These issues would typically be dealt with by discussion and negotiation between stakeholders, which could trigger further activity within a formal legal or regulatory setting. These are often referred to as Social Licence but could include force majeure due to civil unrest and war.

B. Steps in categorisation

30. The steps in the classification process include:

(a) Identifying the relevant social and environmental contingencies;

(b) Estimating the probability that social and environmental issues will be resolved and maintained over the life cycle of the project. This will depend on the specifics of a project and the legal, regulatory and social environment in which it is proposed to be carried out. When there is a history of similar project developments, they may be used as analogues. Although an assessment of the probability of resolving social and economic contingencies is likely to be subjective, it should be based as much as possible on a documented analysis;

(c) Consideration of the level of activity needed and the status of this, to resolve social and environmental issues at the time of an evaluation and classification. This will depend on the project:

[7] The positive impact of a resource recovery project (e.g., job creation, economic regional development) would not be likely to impede resource development and may not be considered to be a contingent factor in classification.

(i) When no or only routine activity is required, social and environmental issues may not be a contingency;

(ii) In other cases, a high level of effort and active engagement with stakeholders may be required over an extended period.

(iii) Evidence of active engagement with stakeholders towards the resolution of social and environmental contingencies must be based on substantial documentation, and would not be satisfied by an unsubstantiated claim or a token effort. The nature of this will depend on the project and on the social and environmental issues that are involved. It could include, for example, documented proof that an Environmental and Social Impact Assessment (ESIA) was being carried out or has been submitted for approval, that there are constructive discussions with interested parties, the establishment of training and other social programmes, etc.;

(iv) Lack of active engagement with stakeholders in the resolution of social and environmental contingencies. The consequences of a lack of engagement will depend on the situation. In an established area with a history of resource development, project approval may be a matter of routine and require little or no effort. In other cases, it will result in a project not receiving approval and it being put on hold or abandoned.

(v) Active engagement with stakeholders does not necessarily mean that this will lead to successful resolution of the contingencies. Similarly, a lack of engagement at the time of an evaluation does not necessarily mean that a project will be unable to proceed.

31. The following points should be noted:

(a) The assessment of social and environmental factors for resource categorisation has not been common resource evaluation practice. Evaluators should ensure that they apply an appropriate level of expertise for an evaluation, which may require consulting with those who have such expertise;

(b) Evaluation and classification can only be based on the information that is available at the time of the evaluation. Subsequent changes may require a re-evaluation and reclassification;

(c) An estimate of probability should be at a level needed to classify to a UNFC sub-category (e.g., the resource Category may be the same whether the probability is 60 per cent or 70 per cent). It does not necessarily require formal calculation or great precision, and subjective estimation of probability[8] (at different levels of sophistication) will usually be more appropriate;

(d) The uncertainty associated with any estimate should be recognized;

(e) There will usually be multiple contingencies and the lowest ranking one should be assigned to the overall project classification, as illustrated in the example in the Table in Annex II;

[8] Subjective probability is based on personal belief that an event will occur. There are several approaches to making subjective probability estimates, from simple "guesses" to sophisticated Delphi exercises that combine the beliefs of a group of experts.

(f) The method used to estimate a probability should be documented. This will be particularly important when the information is to be used for investment decisions or raising of funds for a project.

C. The proposed E-axis social and environmental categories and sub-categories

32. Proposed changes to the existing E-axis Categories and Sub-categories are summarized in the following text. Further discussion and explanation can be found in the 2018 Concepts Report.

(a) E1: Extraction and sale has been confirmed to be economically, socially, and environmentally viable.

The current E1 Category and Sub-categories only refer to economic viability and it is proposed to add social and environmental factors and some minor changes in wording.

E1.1: An economic project (i.e., E1.1) is one for which anticipated monetary revenues equal or exceed the cost (typically by a measure such as a discounted NPV > 0).

E1.2: Addresses the situation when an otherwise uneconomic project becomes viable as the result of "subsidies and/or other considerations", which is often due to social considerations.

It is less clear what is meant by "other considerations", but it implies a project that is not subsidized and runs at a loss, perhaps as the result of social considerations.

Further discussion on subsidies can be found in the 2018 Concepts Report (ECE/ENERGY/GE.3/2018/4), Section V, B.

(b) E2: Extraction and sale is expected to become economically, socially, and environmentally viable in the foreseeable future.

No change is proposed to the E2 Category other than identifying social and environmental issues in addition to economic viability.

The E2 category does not currently contain any Sub-categories but, as noted above, it is recommended to consider establishing two Sub-categories, based on the probability of approval, a significant aspect of which is the effort directed towards resolving the relevant contingencies. The level of engagement required for their resolution depends on the project, the formal regulatory requirements and the informal situation regarding social and environmental issues. However, the activity does not automatically relate to the probability of approval. A high level of active stakeholder engagement could be tied to a low probability of approval, but in some cases, such as in a well-developed area with considerable prior, analogous, activity, there may be a high probability of approval because little, or only routine, activity is needed.

E2.1 Issues are yet to be resolved, but there is a high probability of their resolution evidenced by an active attempt to resolve all impediments (contingencies) with a high probability of success, a history of similar projects in the area, or other indications, within the foreseeable future.

E2.2 Issues are yet to be resolved, but there is either:

An active attempt to resolve all impediments (contingencies) with a medium probability of success, or;

No activity to resolve impediments, but based on the characteristics of the project and previous history of similar projects in the area, or other supportive information there a medium probability of their resolution within the foreseeable future.

The relationship of E2.1 and E2.2 to the Project Maturity sub-classes is discussed below, but it should be noted that it is not a simple one-to-one relationship.

(c) E3: Extraction and sale is not expected to become economically, socially and environmentally viable in the foreseeable future, or evaluation is at too early a stage to determine economic, social, or environmental viability

No change is proposed to the E3 Category or Sub-category (3.1, 3.2, 3.3) definitions, other than identifying social and environmental issues in addition to economic viability.

E3.1: No additional guidance

E3.2: Whether or not there is an active effort to resolve social and environmental issues, the outcome is unknown or unclarified.

E3.3: Whether or not there is an active effort to obtain approval, the probability of receiving approval is less than medium and may be zero

33. Categorisation depends on the probability of resolving all relevant contingencies. Although the estimation of probabilities will be largely subjective, the percentages given below are based on studies of common usage of terms, such as "high probability"[9]. When it is uncertain into which category a contingency would fall, the lower one should be selected.

34. For social and environmental contingencies, the probability of successful resolution depends on the significance of the issues and the level of activity needed for their resolution.

35. The criteria of Probability of Approval and the Level of Stakeholder Engagement are related and may be combined as follows:

(a) Active Stakeholder Engagement with:

- High probability of approval (> 80 per cent)
- Medium probability of approval (50 – 80 per cent)
- Low (< 50 per cent), or unknown probability of approval.

(b) No Active Stakeholder Engagement:

- High probability (> 80 per cent) of approval based on a demonstrated history of outcomes in analogous situations.
- Medium probability (50 – 80 per cent) of approval based on a demonstrated history of outcomes in analogous situations
- Low (< 50 per cent) or unknown probability of approval.

36. The application of the above to classification in UNFC is summarized in the Table 1.

[9] The probabilities shown here are based on surveys of word usage. A useful reference on this topic is: Mosteller, F. and Youtz, C., 1990, Quantifying Probabilistic expressions, Statistical Science, Vol. 5, No. 1 pp.1-34. The Intergovernmental Panel on Climate Change has a similar approach, but the words that it uses are not the same.

Table 1
Categorisation based on Level of Stakeholder Engagement and Probability of Approval

Stakeholder Engagement	*Active*	*Not Active*
Probability of Approval	E2.1	
High (> 80%)		E2.2
Medium (50 – 80%)	E2.2	E3.3
Low (< 50%)	E3.3	
Unknown or unclarified	E3.2	

37. This is not a requirement for a specific probability estimate, but for a determination of which range, < 50 per cent, 50 – 80 per cent or > 80 per cent, is appropriate. In most cases, this will be a qualitative, not a quantitative, estimate. When there is doubt, the lower probability should be assigned.

38. When determining the appropriate resource category, the evaluator should consider the significance of the social and environmental contingencies, the level of concern of regarding these issues by stakeholders and the activities, including the necessary level of engagement, between them that is required to resolve them.

D. Related contingencies

39. As noted above, other E-axis factors may be affected by social and environmental issues. The effect of these on classification is likely to vary between different operators and others with different Realms of Discourse. For example:

(a) Ownership[10] and regulatory Approval are unlikely to be factors for governments but will be significant for others;

(b) The decision to commit to executing a project usually lies with an owner, not with a government.

40. This may result in different classifications for the same project. This is recognized in UNFC-2009 Part II Section IV National Resource Reporting, although that focuses mainly on aggregation. They may include the following:

(a) Legal framework. The right to produce and sell (or benefit) from a resource.

- E3 if there is no legal right to produce and sell[11], as is the case for many exploration activities, and no negotiation or application in process.
- E2 if the legal right to produce and sell is being negotiated but not finalized, or is in dispute.
- E1 if the legal right to produce and sell is established and not in dispute.

(b) Regulatory approval. This is required for many aspects of extraction operations, ranging from major environmental approval to routine minor issues such as individual well abandonment approvals.

[10] In most resources, an operator is not the owner of a resource, but is granted contractual rights by the owner, to explore for, produce, and sell, a product.

[11] Except for non-sales production, (E3.1).

- E3 if required but not applied for or applied for and not approved.
- E2 if applied for but not yet received.
- E1 if received or, located in areas and jurisdictions where there is an established history of approval indicates that approval can be expected.

41. Classification may be relatively straightforward for formal legal and regulatory processes since they have either:

(a) Not been initiated (i.e., not been applied for);

(b) Been initiated and in the process of being considered;

(c) Been initiated and approval has not been granted;

(d) Been approved.

42. Other E-axis non-economic factors mentioned in UNFC, for which classification may be less clear, include:

(a) Fiscal framework. The terms regarding taxes, royalties, production sharing, or other fiscal provisions under which extraction operations are carried out may be influenced by social and environmental considerations.

- E3 if not determined.
- E2 if it is being negotiated but not finalized, is in dispute, or there is uncertainty due to the possibility of a change that could affect the commercial viability of a project.
- E1 if established, not in dispute or uncertain, and allows a decision to implement a project to be made.

(b) Contractual conditions. These are specific to an asset or project, but may contain terms beyond those of the legal or fiscal framework (e.g., a requirement to use local labour, private sector contracts, lease expiry after a specific time, abandonment and reclamation obligations, etc.). A contract may not always be required, but if it is:

- E3 if it does yet not exist.
- E2 if they are being negotiated but not finalized, are in dispute, or there is uncertainty due to the possibility of a change that could affect the commercial viability of a project.
- E1 if established, not in dispute or uncertain in any manner, and is expected to be concluded with a high degree of certainty.

43. The contingencies relevant for a specific project will vary, and there may be others that are not listed previously. An environmental or social contingency that results in the delay of a project can have a major impact on the economic viability (e.g. a decrease in the discounted NPV) that may warrant a reclassification. Users of UNFC may elect to use attributes to distinguish between projects where the contingencies are within their control and where they are not. This may be done, for instance, to improve information to government or others of what the quantitative effects of changes in the framework conditions they control may be.

VI. Project Maturity Sub-Classes

44. UNFC-2009 Section IV refers to Sub-Classes that are illustrated in Figure 3. Classes and Sub-Classes defined by Sub-Category. These are described in detail in the Guidelines on

the Use of Project Maturity to Sub-classify Projects using UNFC as contained in UNFC-2009, Annex V, which states that the Categories and Sub-Categories of UNFC reflect the probability of a project attaining commerciality. "The Project Maturity Sub-Classes are based on the associated actions (business decisions) required to move a project towards commercial production/extraction".

45. The relation between the suggested E2 Sub-categories and the Project Maturity Sub-Classes of On Hold and Development Pending is not straightforward. Project Maturity describes the current status of a project, but a project that is On Hold or Development Pending could have a probability of the resolution of the relevant issues that range from low to high but provides no indication of the probability that the relevant contingencies will be resolved.

Annex I

Proposed revised E-axis Categories

Suggested revisions to the current UNFC E-axis Categories and Sub-categories are shown below, and include:

(a) Inserting "socially, and environmentally" after "economically";

(b) Inserting additional wording and some deletions for clarity (shown in *italics* or as deleted text shown ~~by strikethrough text~~);

(c) Adding sub-categories E2.1 and E2.2 to indicate the probability that contingencies will be resolved in the foreseeable future;

(d) Projects that are unable to proceed until the resolution of economic, social, or environmental issues, but for which there is no attempt to resolve them or expectation of their resolution in the foreseeable future would be classified as E3.3.

Proposed revised Categories

Category	*Definition*[a]	*Supporting Explanation*[b]
E1	Extraction and sale has been confirmed to be economically, *socially, and environmentally* viable	Extraction and sale is economically, *socially, and environmentally* viable on the basis of current ~~market~~ conditions and realistic assumptions of future ~~market~~ conditions. All necessary *conditions* ~~approvals/contracts~~ have been confirmed or there are reasonable expectations that all necessary conditions ~~such approvals/contracts~~ will be ~~obtained~~ met within a reasonable timeframe *and there are no impediments to the delivery of the product to a market*. ~~Economic~~ Viability is not affected by short-term adverse market or other conditions provided that longer-term forecasts remain positive. *Adverse changes in conditions could result in reclassification to E2 or E3.*
E2	Extraction and sale is expected to become economically, *socially, and environmentally* viable in the foreseeable future.[c]	Extraction and sale has not yet been confirmed to be economically, *socially, and environmentally* viable but, on the basis of realistic assumptions of future ~~market~~ conditions, there are reasonable prospects for economic, social and environmental viability in the foreseeable future. *Removal of all impediments (contingencies) is necessary for reclassification to E1. Adverse changes in conditions could result in reclassification to E3.*

Category	*Definition*[a]	*Supporting Explanation*[b]
E3	Extraction and sale is not expected to become economically, *socially, and environmentally* viable in the foreseeable future or evaluation is at too early a stage to determine economic, *social, and environmental* viability[c]	On the basis of realistic assumptions of future ~~market~~ conditions, it is currently considered that there are not reasonable prospects for economic, *social, and environmental* viability in the foreseeable future; or, this cannot yet be determined due to insufficient information. Also included are quantities that are forecast to be extracted, but which will not be available for sale.

[a] Annex I forms an integral part of UNFC-2009.

[b] The term "extraction" is equivalent to "production" when applied to petroleum.

[c] The term "deposit" is equivalent to "accumulation" or "pool" when applied to petroleum.

Proposed revised Sub-categories

Category	*Sub-category*	*Sub-category Definition*
E1	E1.1	Extraction and sale is economically, *socially, and environmentally viable* on the basis of current conditions and realistic assumptions of future conditions.
	E1.2	Extraction and sale is *currently* economically, *socially, and environmentally* viable ~~on the basis of current market conditions and realistic assumptions of future market conditions, but is made viable~~ *as a result of* ~~through~~ government subsidies and/or other considerations.
E2	*E2.1*	*Not all economic, social and environmental contingencies have been resolved, but there a high probability that they will be resolved within the foreseeable future.*
	E2.2	*Not all economic, social and environmental issues have been resolved, but there is a medium probability that they will be resolved within the foreseeable future.*
E3	E3.1	Quantities that are forecast to be extracted, but which will not be available for sale.
	E3.2	Economic, *social, and environmental* viability of extraction cannot yet be determined due to insufficient information.
	E3.3	~~On the basis of realistic assumptions of future market conditions,~~ It is currently considered that there are not reasonable prospects for economic, *social, and environmental* viability ~~extraction and sale~~ in the foreseeable future.

Note: See Section V. C "The proposed E-axis social and environmental categories and sub-categories", and the Table on Categorisation based on Level of Stakeholder Engagement and Probability of Approval, for guidance on what would be considered high or medium levels of probability.

Annex II

Example of E-axis resource specific classification

1. From a draft report by the UNFC and Renewable Energy Classification Working Group of the Expert Group on Resource Classification. The overall ranking shown in the table is that of the lowest potential E Category.

Issue / potential contingency	*Level of engagement*	*Probability of approval*	*Potential E Category*
Legal	Relevant licences	done	E1
Regulatory	Relevant permissions	granted	E1
Market access	Local use	99%	E1
Social	No objections expected	90%	E1
Economic	Project screened economic	95%	E1
Political	No worries expected	99%	E1
Internal & external approvals/commitments	Commitments made	100%	E1
Environmental	Licence approval in process. Issue with the black-rimmed beetle frog habitat	50%	E2
Timing (<5 years or>5 years)	<5 years	Uncertain (see environmental)	E2
Total = lowest ranking issue			**E2**

2. Specifications for the application of the United Nations Framework Classification for Fossil Energy and Mineral and Resources 2009 (UNFC-2009)[12]. Annex II Decision tree (E axis) to aid the classification of geothermal projects according to UNFC-2009. This has the potential for further development to create a flow chart for all resources.

[12] http://www.unece.org/fileadmin/DAM/energy/se/pdfs/UNFC/UNFC_GEOTH/UNFC Geothermal Specs.pdf

Annex III

Glossary of Terms

As noted in the text, a separate document "Accommodating Social and Environmental Considerations in UNFC: Concepts and Terminology (ECE/ENERGY/GE.3/2018/4) was issued to clarify some existing terms and definitions and to propose new ones. That document should be consulted for details, but the key proposals are provided here for convenience.

Contingencies are criteria or conditions that must be satisfied before a project can proceed.

(a) To avoid confusion, between the terms "commercial", "economic" and "economic in the narrow sense" it is recommended that UNFC uses:

- **Economic**: a project is economic when the anticipated monetary revenues equal or exceed the costs by a margin that satisfies financing requirements, taking the risks and opportunities into account, and provides a positive return on investment, often measured by a monetary criterion, such as having a positive NPV at a particular discount factor.
- **Commercial**: a project is commercial when it has been confirmed to be technically, economically, socially, and environmentally feasible.

(b) Neither social nor environmental factors are defined in UNFC, nor any of the resource-specific guidelines, and the difference between them is not always clear. A formal definition may not be necessary, but it should be understood what these terms mean. The following is suggested:

- **Environmental**: the physical, chemical, and biological impact on, or changes to, the surrounding pre-existing environment, due to a project (e.g. heavy metal contamination in soils or water, disruption of wildlife habits and migration characters, etc.).
- **Social:** the resulting impact on humans and society, from a project, such as:

Effects stemming from environmental changes (e.g. health issues due to heavy metal contamination).

Changes in social systems and structures, (e.g. ownership claims, traditional land usage, land and other value changes, changes in local population community structures, the creation of jobs and economic activity, etc.).

- **Political:** action by a controlling organization that may influence, impede, prevent, or facilitate the ability to proceed with a project.

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Guidelines for accommodating social and environmental considerations in the United Nations Framework Classification for Resources

Accommodating Social and Environmental Considerations in the United Nations Framework Classification for Resources: Concepts and Terminology

Prepared by the Social and Environmental Considerations Task Force of the Expert Group on Resource Classification

Summary

This report of the Social and Environmental Considerations Task Force is a supplement to the document "Draft Guidance on accommodating environmental and social considerations in the United Nations Framework Classification for Resources (UNFC)" (ECE/ENERGY/GE.3/2018/3) that will be presented at the ninth session of the Expert Group on Resource Classification. It covers two main topics:

- Clarification of some terms relevant to social and environmental considerations.
- Discussion of topics that arose during, but outside, the immediate scope of the work of the Social and Environmental Considerations Task Force.

It is presented for consideration by the Expert Group at its ninth session, and the review and update of UNFC that is planned to start in 2018. It is not intended to be comprehensive, and many of the issues it contains would benefit from further thought and discussion.

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I. Introduction

1. The document "Draft Guidance on Accommodating Environmental and Social Considerations in the United Nations Framework Classification (UNFC[1])" (ECE/ENERGY/GE.3/2018/3) (2018 report) presents the work of the E-Axis Sub-group and its successor, the Social and Environmental Considerations Task Force. Reports of the predecessor E-Axis Sub-group were presented at the 2016 and 2017 meetings of the Expert Group on Resource Classification; they provide background information and can be found on the United Nations Economic Commission for Europe (ECE) website[2].

2. The Terms of Reference of the E-axis Sub-group required it to provide: "A list and definitions of the E-axis classification factors, as identified in UNFC". This was not intended to include factors other than social and environmental, such as economics, market prices, legal, regulatory or contractual conditions. However, the latter does not exist in isolation, and during the preparation of the document "Draft guidance on accommodating environmental and social considerations in UNFC" presented to the seventh session of the Expert Group in 2016 (ECE/ENERGY/GE.3/2016/8), it became evident that clarification of additional concepts and terminology would be appropriate. Several of these are of general relevance beyond the scope of the Task Force and the E axis. They are presented in this document.

3. The 2017-2018 Work Plan for the Task Force, includes a requirement "to ensure alignment with the Sustainable Development Goals and the commitments of the Paris Agreement on climate action". This could have significant implications for the work of the Task Force and is discussed in Section III.

4. This document summarizes various factors, for consideration during the forthcoming update of UNFC.

II. Terms and Concepts

A. Why do we classify resources?

5. Resource classification is not an end, but a means of providing information to assist in making decisions that may include (United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009) page 3, I Application):

(a) Industry business process management, including operational decisions, ranging from major to smaller projects, such as drilling or mining, platform and facilities construction, to day-to-day maintenance of operating projects.

(b) Financing, raising and allocating capital by the provision of information to investors and potential investors in public or private realm to assist in their decisions to provide capital.

(c) Resource management by governments and others, including:

- Short-term administration of activities of national and other resource owners.

[1] The United Nations Framework Classification for Resources (UNFC) changed its name in April 2017. Prior to this, UNFC was known as the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009).

[2] http://www.unece.org/index.php?id=47092

- Longer term, the compilation of resource inventories, planning for technology development, and future supply.

B. The context of evaluation and classification: the Realm of Discourse (ROD)

6. The Preface to UNFC states, "It provides a single framework on which to build international energy and mineral studies, analyze government resource management policies, plan industrial processes and allocate capital efficiently". However, although there is some degree of commonality, the specific context and conditions under which the different users will evaluate and classify resource are not the same. For example:

(a) Resource reporting for the United States Securities and Exchange Commission (SEC) / Financial Accounting Standards Board (FASB) and the Canadian Standards Association (CSA) have different requirements.

(b) An operating company must satisfy regulatory requirements, but these may not be a consideration for a government agency

(c) A government agency may estimate and classify resources over a large area that contains projects operated by many companies and will be concerned about aggregate performance, not the individual projects.

(d) The conditions required to a meet a Sustainable Development Goal (SDG) may differ from those of operating companies or by governments.

7. For each of these examples (and more), resource evaluation and classification will have to meet a consistent set of conditions, that may differ from the others. Once these are met, evaluation scenarios will address conditions that apply to specific projects. The context and set of conditions can be described as a "Realm of Discourse" (ROD)[3], the full context in which a decision is to be made and will determine basic conditions relevant to evaluation and classification for that purpose.

8. Resource estimates and classification within the same ROD must satisfy the same set of conditions and should be comparable[4]. Since there are differences in conditions between RODs, there may be differences in estimated quantities and classifications from those of other RODs.

9. An understanding of the result of a classification will be limited unless the ROD and the factors that underly it are known. In practical terms, this means that the purpose, conditions, contingencies, and any other factors should be clearly stated when reporting resource classification.

[3] "Realm of Discourse" may be compared to practices in accounting for which Management Accounting, Cost Accounting, and Tax Accounting are separate RODs. It is also a concept from logic and mathematics in which the initial conditions under which an argument is developed are clearly laid out (e.g., all positive integers, all real numbers, complex numbers, etc.).

[4] This does not mean that they will be identical, but that, given amount and quality of the available information, they will not differ significantly.

C. Projects, Realm of Discourse, and Scenarios

10. The Guidance Note to support the UNFC-2009 Definition of a Project was issued in 2016[5]. We assess projects by developing and evaluating scenarios and classify the results. In the context of UNFC, a scenario is a set of current and future events that are considered to describe the features of a project relevant to its potential commerciality and includes not only economics but other factors that control commerciality (access to the market, the probability of regulatory approval, etc.).

11. There are two components to a scenario, those dictated by the ROD (e.g., for financial reporting) and others that are specific to that scenario.

12. It is not unusual for a project to be assessed under more than one scenario for which the ROD conditions are the same, but with different details (e.g., to optimize project results or to examine sensitivities to input parameter assumptions).

13. The ROD dictates the factors to be considered in an evaluation scenario. As a classification system, the UNFC is "value-free", and can be used to classify the result of evaluations whatever the ROD. As a simple example, a project could be evaluated and classified under different Realms of Discourse that are identical except for the treatment of CO_2 emissions:

(a) No consideration is given to the potential climate effects of the project's CO_2 emissions. This could be the actual condition considered by the operator for the project to proceed to completion, resulting in classification as E1.

(b) The project's CO_2 emissions may be under review by a regulatory authority for granting approval for the project to proceed, resulting in classification as E2.

(c) The CO_2 emissions of the project and of the use of the product could be considered for an assessment of the impact on climate change, resulting in classification as E3.

(d) Classification to assess potential carbon credits as part of Nationally Contributions under the Paris Agreement.

14. The results of the evaluations of the four example scenarios can all be classified by UNFC, but they would not necessarily be classified in the same way.

III. The Sustainable Development Goals and the Commitments of the Paris Agreement on Climate Action

15. The Sustainable Development Goals (SDG) and the Paris Agreement on climate action are RODs that can be accommodated by UNFC.

- Some of the SDGs imply or suggest a set of policies or practices that could affect the economic, social, and environmental implications of energy development projects. Those policies or practices would define a ROD for an evaluation; different resource classifications may result in these different SDG-driven RODs.
- UNFC could be used in studies carried out to assess and provide information on specific SDGs that have a direct implication for resource development, such as #7

[5] The definition says, "a defined development or mining operation which provides the basis for economic evaluation and decision-making", but it does not address exploration, renewable, or anthropogenic resources, and could do with further review.

Affordable and clean energy, perhaps such as, #9 Industry, Innovation and Infrastructure, #12, Responsible Consumption and Production, and # 13 Climate Action.

16. Implementation of the Paris Agreement on climate action will be carried out by participating countries through nation-specific Intended Nationally Determined Contributions (INDCs). As these INDCs are developed, they will become part of the basic context or ROD for energy development projects and resources in each country. If desired, regionally or globally consistent policies can be hypothesized as a single ROD for evaluation of resources across multiple countries or regions.

17. Development of the use of UNFC for the SDGs and the Paris Agreement would benefit from the further discussion but is beyond the scope of this exercise.

IV. Classification considerations

A. Degree of favourability

18. UNFC describes the E-axis factors as (UNFC-2009 incorporating Specifications for its Application, Part I, Section II, Categories and Sub-categories):

> "...designating the degree of favourability of social and economic conditions in establishing the commercial viability of the project including consideration of market prices and relevant legal, regulatory, environmental and contractual conditions".

19. The phrase, degree of favourability, is not defined in UNFC but can be interpreted as the probability[6] of attaining commerciality, and applies to all the UNFC axes. The probability of economic, social, and environmental being such that a project can be carried out is a key factor in determining classification and dictates a threshold for when changes in classification are to be made (e.g., progression from E2, "Expected to become economically viable in the foreseeable future", to E1, "Confirmed to be economically viable").

20. It is recommended that the term, "degree of favourability", be replaced in UNFC with a reference to probability.

B. Contingencies

21. UNFC-2009 incorporating Specifications for its Application, Part I, Section III, Classes, states:

> "Potentially recoverable quantities may be recovered in the future through projects that are contingent on one or more conditions yet to be fulfilled. Contingent projects are classified into projects for which the social and economic conditions are expected to be acceptable for implementation and those where they are not. In the former case, contingency is caused by the recovery project not being sufficiently matured to confirm technical and/or commercial feasibility, which can then provide the basis for a commitment to extract and sell the commodity at a commercial scale. In the latter case, neither the project nor the economic and social conditions are sufficiently matured to indicate a reasonable potential for commercial recovery and sale in the foreseeable future."

[6] This is more likely to be a subjective probability than a calculated probability.

22. Contingencies are criteria that must be satisfied before a project can proceed to production and may include "market prices and relevant legal, regulatory, environmental and contractual conditions" (UNFC-2009 Section III Classes), and others. Although the contingencies may differ between projects, many would include social and environmental issues. In some cases, a contingency could fall within the scope of both the E and F-axes and possibly the G-axis.

23. The Petroleum Resources Management System (PRMS) refers to contingencies and the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) Template uses the term "modifying factors" in the same sense. They may include "market prices and relevant legal, regulatory, environmental and contractual conditions" and others.

24. *Definition*: **Contingencies** are criteria or conditions that must be satisfied before a project can proceed.

25. The extract from the Canadian Oil and Gas Evaluation Handbook (COGEH) Volume 2, Section 2 (Resources Other than Reserves (ROTR) Guidelines) that follows is an example of contingencies that may be considered when classifying oil and gas resources. Not all will be relevant in every case, nor is this list necessarily complete and further development would be required to use it with UNFC, but is included to provide context.

(a) Technical contingencies

- Established Technologies (not a contingency, but included for completeness and more or less equivalent to the United States Securities and Exchange Commission (SEC) "Reliable Technologies"). Reserves may be assigned.
- Technology Under Development. Field tests to establish the economic viability of an extraction process. Contingent Resources, but not Reserves, may be assigned.
- Experimental Technology. Field tests to establish the technical viability of a recovery process. No recoverable resources may be assigned (although production would be recorded and, when needed, reconciled at the end of a reporting period).

(b) Economic contingencies

- Fiscal regime (prices, royalty rates, production sharing terms, income taxes in the case of after-tax evaluations, etc.). Note: an example is a contingency for the gas price to increase from US$ 2/Mcf (1,000 cubic feet of natural gas) to US$ 4/Mcf to move from being uneconomic to being economic.
- Costs (capital costs, operating costs, pipeline tariffs or tolls, etc.).

(c) Non-technical contingencies

- Legal: the right to explore for, produce and sell, or receive hydrocarbons in kind, or payment for risk services.
- Regulatory contingencies: regulatory approval to proceed with development and production.
- Market access.
- Political factors: these could include political or social unrest, war, or government action of any kind that may impede proceeding with a project. See separate comment below.

- Social licence: social licence is related to environmental contingencies, but it is not necessarily a function of formal regulatory approval. What constitutes a social licence is not readily determined and depends heavily on subjective personal opinions and political issues specific to each project's geographic location. At this time, guidance on the role of social licence in the classification of oil and gas resources is not well developed.
- Internal and external approvals and commitment to project development.
- Development timing.

C. The foreseeable future

26. UNFC-2009 incorporating Specifications for its Application, Part I, Section III, Classes, uses the term "foreseeable future" and, in one form or another, it is a basic concept for resource evaluation. It may be dealt with by imposing an arbitrary time limit (e.g., the SEC five-year limit for Proved Undeveloped Reserves, or a fifty-year limit to assigning reserves to bitumen recovery projects). However, not only do resource projects differ greatly, but there are many components to a resource evaluation, each with its degree of predictability over time, and it would not be realistic to impose a definite time for all projects classified under UNFC.

27. Consideration should be given as to whether the concept of the foreseeable future needs clarification.

D. Internalities and externalities in resource evaluation

28. Resource classification has traditionally focused on the immediate extraction process as carried out by an operating entity with little or no consideration of externalities, which are described as:

> "An externality is a cost or benefit resulting from an action that is borne or received by parties not directly participating in the action." (the United States Environmental Protection Agency (U.S. EPA), 2010)[7].

29. In the current context:

- An internality is a cost or benefit that affects an equity participant in a project.
- An externality is a cost or benefit that affects a party who did not choose to incur that cost or benefit.

30. These may be adverse (negative) or beneficial (positive), but projects proceed by a process that progressively satisfies what may be regarded as negative internalities or externalities. Although positive internalities and externalities may motivate a project, once resolved they play no further role in classification.

31. Concerns about social and environmental issues often involve externalities that have not been previously considered in resource assessment but are becoming of increasing importance. They may be dealt with by processes such as an Environmental and Social

[7] U.S. EPA, 2014, Guidelines for Preparing Economic Analyses, EPA 240-R-10-001, December 2010 (updated 2014); Front Matter, p. 15. Available on-line at: https://www.epa.gov/environmental-economics/guidelines-preparing-economic-analyses. Additional information and references can be found at https://en.wikipedia.org/wiki/Externality

Impact Assessment (ESIA)[8], which have been developed to address these types of concern, although not every project will be subject to this type of analysis. For classification according to UNFC, externalities may be included in the concept of contingent factors. Examples are:

(a) Climate change may not be a consideration for the evaluation of resources, but there is an increasing necessity for the CO_2 emissions of a project to be addressed. This may be done in several ways, (depending on the ROD) and could include:

- That there is currently no CO_2 price that blocks the project and the issue is ignored; there is no contingency.
- Applying a shadow price for future CO_2 costs that would block the project; a contingency until resolved.
- Government imposed costs for CO_2 emissions (by various means) that could affect the economic viability of a project; a contingency that must be addressed.

(b) The design of a national legal/fiscal framework about factors such as climate change or social issues that promotes hinders or prevents, the development of a resource.

32. The table below is a simplified illustrative example from the point of view of a project operator or equity participant and society.

	COSTS		*BENEFITS*	
	OPERATOR	SOCIETY	OPERATOR	SOCIETY
INTERNALITY	Capex, Opex	X	Profits from sales	X
EXTERNALITY	X	Social and Environmental	X	Raw material, Revenue from Taxes, Royalties, Jobs

33. Most existing resource classification systems (PRMS, CRIRSCO Template, etc.) make mention of what could be considered externalities, but provide little guidance, and have historically been used to classify projects by only considering internalities. However, what were historically considered to be externalities are becoming of increasing importance, often to the extent that they become internalities for evaluation and classification, with a significant effect on the ability to carry out a project.

34. An example of this is the System of Environmental-Economic Accounting (SEEA)[9] which addresses the issue of "residuals" which are increasingly likely to be generated the longer a project goes on. This may also include changing views on legacy wastes which cause materials not previously regulated as residuals to be classed as such during a project rather than from the beginning. This is an example of how and why a contingency provision should be made in any full cost accounting approach to a whole project life-cycle.

[8] http://www.ifc.org/wps/wcm/connect/296ae980488551f5aa0cfa6a6515bb18/ESIA.pdf?MOD=AJPERES

[9] https://unstats.un.org/unsd/envaccounting/seea.asp

E. Commercial viability

35. Commercial viability is described (UNFC-2009 incorporating Specifications for its Application, Part I, Section III, Classes Footnote c to Figure 2) as:

> "Commercial Projects have been confirmed to be technically, economically and socially feasible…."

36. That is, they have satisfied all requirements of the E, F and G axes, to be feasible to proceed.

37. The terms "**economically viable**" and "**economic (in the narrow sense)**", are used in Footnote d of UNFC-2009 incorporating Specifications for its Application, Part I, Annex I, Definition of Categories and Supporting Explanations as:

> "**economically viable** encompasses economic (in the narrow sense) plus other relevant "market conditions", and includes consideration of prices, costs, legal/fiscal framework, environmental, social and all other non-technical factors that could directly impact the viability of a development project."

38. This definition of "economically viable" (which includes "economic in the narrow sense") is for the E-axis factors, but a project would not be commercially viable unless it also met the requirements for the F and G axes.

39. The term "economic in the narrow sense" is not defined in UNFC-2009, nor is it commonly used elsewhere, but it is considered to mean that a project satisfies a monetary criterion, such as having a positive Net Present Value (NPV) at a specified discount factor.

40. To avoid confusion, between the terms "commercial", "economic" and "economic in the narrow sense" it is recommended that UNFC:

(a) Discontinues the use of the phrase "Economic in the narrow sense";

(b) Defines the term Economic to only refer to the monetary aspects (e.g., a cumulative discounted cashflow (NPV) greater than zero), instead of Economic in the narrow sense. This is the common usage of the word "economic" for project assessment and consistent with the definition of the word in the Oxford English Dictionary as "maintained for profit";

(c) Replaces "Economically viable" in the E-axis definitions with "economically, socially, and environmentally viable";

(d) Uses "economic" only in reference to the E-axis, not as a synonym for the term Commercial which refers to all three axes of UNFC. ("Commercial Projects have been confirmed to be technically, economically and socially feasible", in the footnote to UNFC-2009 Figure 2).

41. *Definitions:*

(a) **Economic:** a project is economic when the anticipated monetary revenues equal or exceed the costs by a margin that satisfies financing requirements, taking risks and opportunities into account, and provides a positive return on investment, often measured by a monetary criterion, such as having a positive net present value (NPV) at a discount factor.

(b) **Commercial:** a project is commercial when it satisfies all the relevant criteria of the E, F, and G axes that are required for it to proceed.

F. Environmental, social, and political contingencies

42. Neither social or environmental factors are defined in UNFC, nor in any of the resource-specific guidelines. The difference between them is not always clear, and while formal definition may not be necessary, there should be a good understanding of these terms mean. A practical application of them would be:

(a) **Environmental**: the physical, chemical, and biological impact on, or changes to the project area and surroundings, due to a project (e.g. heavy metal contamination in soils or water, disruption of wildlife habits and migration characters, etc.).

(b) **Social:** the resulting impact on humans and society, from a project, such as:

- Effects stemming from environmental changes (e.g. health issues due to heavy metal contamination).
- Changes in social systems and structures, (e.g. ownership claims, traditional land usage, land and other value changes, changes in local population community structures, etc.).

43. These impacts are commonly thought of as being negative but can be positive. Examples of positive environmental impacts include the reprocessing of mine wastes to recover metals, and carbon dioxide capture. Similarly, for social impacts, such as the use of a flooded abandoned quarry for use as a reservoir or recreation, job creation, and advances in technology.

44. Assessment of these impacts requires an integrated use of the physical and biological sciences, engineering, economic, and the social sciences.

(c) **Political:** UNFC does not identify political factors as a contingency although they can have a significant influence on the ability to proceed with a project. Both the CRIRSCO Template and PRMS include political factors as classification criteria but without definition or clarification. It may not be clear where the boundary between social and political issues would lie.

45. From the point of view of classification, political factors can be action by a controlling organization that may influence, impede, prevent or facilitate the ability to proceed with a project. The controlling organization can be varied, from a formal government to guerrilla activity, and action may include legislation, regulation, expropriation, armed conflict, etc.

46. Political factors may sometimes be considered as force majeure situations. An example of this was the reclassification of reserves (111, 112, 113) to contingent resources (221, 321) as the result of armed conflict in Libya in 2011.

47. The resolution of political factors would be beyond the influence of most users of the UNFC other than governments. However, in some cases, they may be influenced by activities such as lobbying or resolved through discussion and negotiation. There is an argument for considering such factors as belonging at least in part, to the F axis, although they are not currently mentioned as such.

G. Social licence to operate (SLO)

48. A project cannot proceed unless the relevant social and environmental contingencies are resolved, typically described as obtaining a "social licence to operate" (SLO).

49. Social licence is a generic term that collects all the social and environmental issues relevant to a resource project under one heading, and although a useful informal term, it is not always clear what might be included. Because of its generic nature, "social licence" is not recommended as a classification criterion, which should be based on the individual contingencies that apply to a project.

50. There are several "definitions" of "social licence to operate", but in summary and with respect to UNFC, achieving a social licence to operate is the resolution of any social and environmental issues that could inhibit or prevent proceeding with a project. This does not mean that all issues will have been resolved to the satisfaction of all parties, but that, for a specific project, they have been resolved to the extent that the project can proceed, even if there are still objections. Considerations should be given to whether a social licence to operate is likely to be maintained over the forecast life of a project.

51. Social licence to operate can be considered as having two components:

(a) **Formal**. The legal and regulatory processes such as the granting of environmental approval, approval to drill, explore, develop, construct, etc.

(b) **Informal.** Those outside a formal legal or regulatory process such as:

- Externalities, unwanted costs that may be imposed on local communities by a mineral recovery project.
- Objections by organizations or individuals that would not be directly affected, but who have concerns of a more general nature (e.g., object to the recovery of uranium in principle).

52. This may trigger further activity within a formal legal or regulatory setting, or informal civil activity ranging from protests to violent action. In the extreme, civil unrest and war may also fall under this heading.

53. These factors could also be further divided into those issues that can or cannot be affected by an organization (operating entity, equity participant or government).

V. Other issues

A. Abandonment, decommissioning, and reclamation

54. The terms "abandonment, "decommissioning" and "reclamation" are not used in UNFC, but they are very much part of social and environmental considerations, and thought is needed as to how they could affect classification under UNFC.

55. There are three possible stages in this process[10]:

(a) Abandonment: involves downhole work to seal off flow in well bores, and surface work to ensure safety at well sites, mines, and quarries or other project sites;

(b) Decommissioning: the closing and potentially removing surface facilities associated with a project. These could include anything from minor local facilities, to major facilities such as large processing plants, or offshore structures;

[10] The abbreviations A&R (Abandonment and Reclamation) and AD&R (Abandonment, Decommissioning and Reclamation) generally include all three of these activities, as does, in a different context, the accounting term ARO (Asset Retirement Obligations).

(c) Reclamation (sometimes called Remediation): the restoration of the surface to conditions that are required by regulatory or other provisions. This can involve minor activities for major restoration projects.

56. A possible additional stage is:

(d) Regeneration, during which the land is returned to or reconstituted for productive use (not necessarily measured by its economic value), for example, a rock quarry used as a reservoir or lake for recreation.

57. The evaluation and classification, of new projects, typically include forecast Abandonment, Decommissioning and Reclamation (AD&R) costs, but they are often not included for the evaluation of ongoing operations.

58. Provision for AD&R costs may be made in several ways, including government-mandated payment into escrowed funds. However, it is not uncommon for a project to reach the end of its life without the means to carry out AD&R. In the oil and gas industry, this has led to thousands, of "orphan" wells around the world, often leaving significant environmental problems. Similar issues occur for mining when abandoned mine sites are left without remediation. When this occurs, AD&R becomes the responsibility of society by default.

59. How should issues of abandonment, decommissioning, and remediation be handled for classification according to UNFC? In some cases, excluding AD&R as a consideration could result in a resource being classified as E1, when including it may could make a project a type of E3.3. Should inclusion of AD&R be mandatory for UNFC when it is significant for a project?

B. Subsidies

60. The UNFC Sub-class E1.2 states:

> "Extraction and sale is not economic since current market conditions and realistic assumptions of future market conditions, but is made viable through government subsidies and/or other considerations."

61. UNFC does not contain a definition of a subsidy, and neither does the CRIRSCO Template nor PRMS. A joint report of the International Energy Agency (IEA), Organization of the Petroleum Exporting Countries (OPEC), Organisation for Economic Co-operation and Development (OECD), and the World Bank defines an energy subsidy as "any government action that lowers the cost of energy production, raises the revenues of energy producers, or lowers the price paid by energy consumers[11]".

62. E1.2 applies only when, the receipt of "government subsidies and/or other considerations", that establish project viability, have been confirmed. If this is not the case, then classification would be as E2.1 or E2.2.

63. Direct funding or other forms of assistance (i.e. grants, low-interest loans, guarantees of product prices) by a government of a project that would otherwise be uneconomic, that results in it being economic for the owners may be for social or other reasons, and could be regarded as an equity contribution, but for UNFC, the quantities associated with such a project should be classified as E1.2.

[11] https://www.iea.org/media/weowebsite/energysubsidies/second_joint_report.pdf

64. A project normally has a fiscal regime imposed by a government (royalties, taxes, etc.) that enables society to share in its results. Adjustments to the terms of such a regime may be modified so that it remains viable for an operator while still providing this. Such adjustments are sometimes claimed to be a subsidy but are part of a normal fiscal structure, and it is questionable if it should be regarded as a subsidy for classification under UNFC.

65. Subsidies can take many forms - in the context of UNFC, the issue is whether the form of a subsidy would change the UNFC Category or Sub-Category for a project.

C. Safety and security

66. During the review of this document, there was a question as to whether safety and security should also be considered. This has not been addressed but is noted for future consideration.

D. Aggregation

67. The results of the evaluations of several projects are typically summed to provide a total for a report, a process described as "aggregation". Such an aggregate may contain the results of hundreds of individual evaluations.

68. Figure 1 UNFC-2009 Categories and Examples of Classes, of UNFC-2009 (ECE Energy Series No. 42) shows 50 different possible Sub-Classes for a resource project, although only 16 of them are indicated as being likely to be used (i.e. the highly coloured boxes). Decision-making is likely to be made on aggregated values from several Sub-Classes. How should this be done? The process is fraught with complexities (e.g., assessing probabilities of discovery and/or development, dependencies, etc.) and has not been addressed for UNFC.

E. Reporting

69. The traditional engineering, geological and economic aspects of resource evaluation are probably generally familiar to or accepted by most users. This is not the case for social and environmental considerations which cannot be understood in isolation and require some explanation. It is important therefore that when the results of social and environmental factors significant to the classification of a resource, an explanation should be provided.

F. Comments received during review

70. Comments received during the final review of this document, and the earlier version presented to the Expert Group at its eight session in 2017 (ECE/ENERGY/GE.3/2017/6), that were wholly or partly beyond the scope of the Task Force's mandate are noted below for possible consideration during the planned update of UNFC.

(a) Certain terms: criteria, factors, issues and conditions have been used interchangeably. The word contingency was also noted, but it has a specific meaning, as something (condition) that must be resolved for classification, and has not knowingly been used interchangeably;

(b) No attempt has been made to provide greater consistency in use of these terms in the 2018 Report or this document, and it applies to all UNFC, not only to social and environmental matters;

(c) The wording in the document "Draft Guidance on accommodating environmental and social considerations in UNFC" (ECE/ENERGY/GE.3/2018/3) has been changed from previous drafts, to indicate that an E1.2 project is economically viable, because of subsidies or "other considerations", but it was noted that the "other considerations" are not defined;

(d) The current E3 definition includes all "quantities that are forecast to be extracted but which will not be available for sale". The question was raised as to whether these quantities should all be included in E3, or should they be classified under "non-sales" associated with the specific category to which they apply, e.g., in E1 non-sales if the project is in E1, E2 if E2 non-sales, E3 if non-sales E3?" Currently, these non-sales quantities lie in a single "box" outside the "regular" three-axis UNFC, as show in Figure 1 of UNFC;

(e) The E axis includes social, environmental, and economic factors. The 2018 Report recommends definitions for the first two of these and assumes that "economic" refers to an assessment such as a discounted net present value. However, it was suggested that it is not clear where factors such as ownership, licence, legal and regulatory issues are for the E axis. They may, in fact, lie on the F axis. Clarification of this would be useful;

(f) It was suggested that the E2 Category should be described by qualitative terms (e.g.," high confidence") rather than probabilities. This issue is too complex to be described briefly and has been the subject of significant studies in areas other than oil and gas classification. It could, however, be worth further discussion.

VI. Recommendations

71. The terminology and concepts discussed in this document have been adopted in the preparation of the document "Draft Guidance on accommodating environmental and social considerations in UNFC" (ECE/ENERGY/GE.3/2018/3) that is to be presented at the ninth session of the Expert Group on Resource Classification. This was considered necessary for the E-axis Sub-group exercise, although it goes beyond its immediate concerns. It is of limited scope and does not cover all relevant issues.

72. An examination of how these terms and concepts are used elsewhere is recommended, such as in the System of Environmental-Economic Accounting 2012 (SEEA 2012, also recognized by the United Nations), and the Global Reporting Initiative (GRI).

73. The issues raised herein are presented for consideration by the Expert Group on Resource Classification, notably for the planned update of UNFC scheduled for 2018 or later. Many of them warrant further thought.